EXPERIMENT – 10

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Batch – 2 [DevOps Non-Hons]
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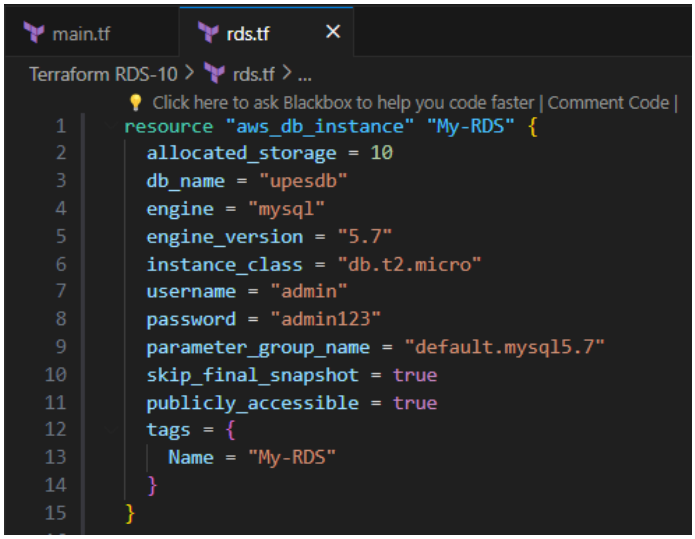
Subject – System Provisioning and Configuration Management Lab

Aim: Creating an AWS RDS Instance in Terraform.

1] Create a Terraform Configuration File (main.tf)

2] Create a Terraform RDS File (rds.tf)



3] Initialize Terraform using command “terraform init”

```
PS F:\UPES\6th Semester\Sys Provisioning and Cnfg Mgmt\Lab\Terraform-Lab-Scripts\Terraform RDS-10> terraform init

Initializing the backend...

Initializing provider plugins...
- Finding hashicorp/aws versions matching "5.31.0"...
- Installing hashicorp/aws v5.31.0...
- Installed hashicorp/aws v5.31.0 (signed by HashiCorp)

Terraform has created a lock file .terraform.lock.hcl to record the provider
selections it made above. Include this file in your version control repository
so that Terraform can guarantee to make the same selections by default when
you run "terraform init" in the future.

Terraform has been successfully initialized!

You may now begin working with Terraform. Try running "terraform plan" to see
any changes that are required for your infrastructure. All Terraform commands
should now work.

If you ever set or change modules or backend configuration for Terraform,
rerun this command to reinitialize your working directory. If you forget, other
commands will detect it and remind you to do so if necessary.
```

4] Validate it using command “terraform validate”

```
PS F:\UPES\6th Semester\Sys Provisioning and Cnfg Mgmt\Lab\Terraform-Lab-Scripts\Terraform RDS-10> terraform validate
Success! The configuration is valid.
```

5] Check the Plan using command “terraform plan”

```
PS F:\UPES\6th Semester\Sys Provisioning and Cnfg Mgmt\Lab\Terraform-Lab-Scripts\Terraform RDS-10> terraform plan

Terraform used the selected providers to generate the following execution
plan. Resource actions are indicated with the following symbols:
  + create

Terraform will perform the following actions:

  # aws_db_instance.My-RDS will be created
  + resource "aws_db_instance" "My-RDS" {
      + address                               = (known after apply)
      + allocated_storage                     = 10
      + apply_immediately                     = false
      + arn                                   = (known after apply)
      + auto_minor_version_upgrade            = true
      + availability_zone                     = (known after apply)
      + backup_retention_period               = (known after apply)
      + backup_target                         = (known after apply)
      + backup_window                         = (known after apply)
      + ca_cert_identifier                    = (known after apply)
      + character_set_name                    = (known after apply)
      + copy_tags_to_snapshot                 = false
      + db_name                               = "upesdb"
      + db_subnet_group_name                  = (known after apply)
      + delete_automated_backups              = true
      + endpoint                              = (known after apply)
      + engine                                = "mysql"
      + engine_version                        = "5.7"
      + engine_version_actual                 = (known after apply)
      + hosted_zone_id                        = (known after apply)
      + id                                    = (known after apply)
      + identifier                            = (known after apply)
      + identifier_prefix                     = (known after apply)
      + instance_class                        = "db.t2.micro"
      + iops                                  = (known after apply)
      + kms_key_id                            = (known after apply)
      + latest_restorable_time                = (known after apply)
      + license_model                         = (known after apply)
      + listener_endpoint                     = (known after apply)
      + maintenance_window                    = (known after apply)
      + master_user_secret                    = (known after apply)
      + master_user_secret_kms_key_id         = (known after apply)
      + monitoring_interval                   = 0
      + monitoring_role_arn                   = (known after apply)
      + multi_az                              = (known after apply)
      + nchar_character_set_name              = (known after apply)
      + network_type                          = (known after apply)
      + option_group_name                     = (known after apply)
```

```
      + parameter_group_name                  = "default.mysql5.7"
      + password                              = (sensitive value)
      + performance_insights_enabled          = false
      + performance_insights_kms_key_id       = (known after apply)
      + performance_insights_retention_period = (known after apply)
      + port                                  = (known after apply)
      + publicly_accessible                   = true
      + replica_mode                          = (known after apply)
      + replicas                              = (known after apply)
      + resource_id                           = (known after apply)
      + skip_final_snapshot                   = true
      + snapshot_identifier                   = (known after apply)
      + status                                = (known after apply)
      + storage_throughput                    = (known after apply)
      + storage_type                          = (known after apply)
      + tags                                  = {
          + "Name" = "My-RDS"
        }
      + tags_all                              = {
          + "Name" = "My-RDS"
        }
      + timezone                              = (known after apply)
      + username                              = "admin"
      + vpc_security_group_ids                = (known after apply)
    }

Plan: 1 to add, 0 to change, 0 to destroy.
```

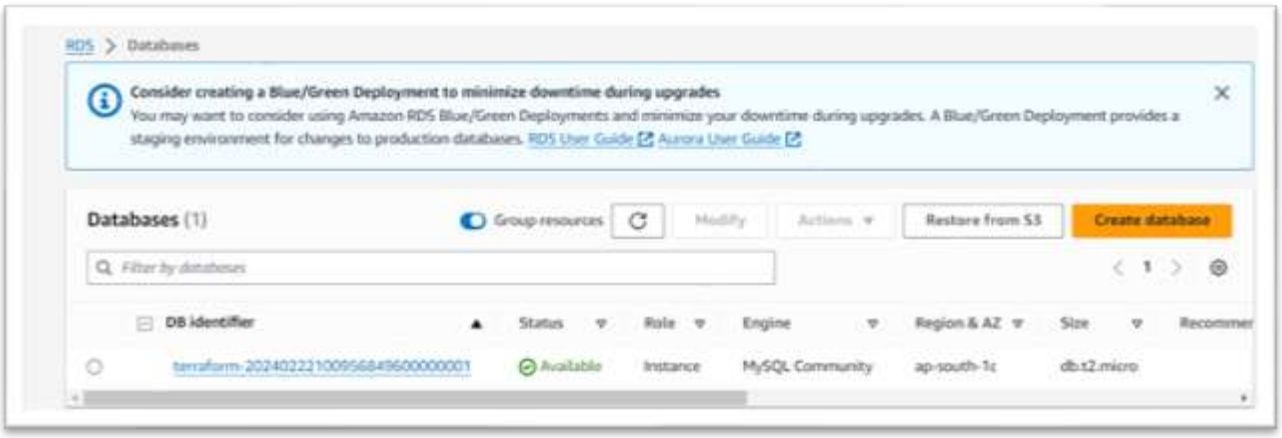
6] Apply it using command “Terraform apply -auto-approve”

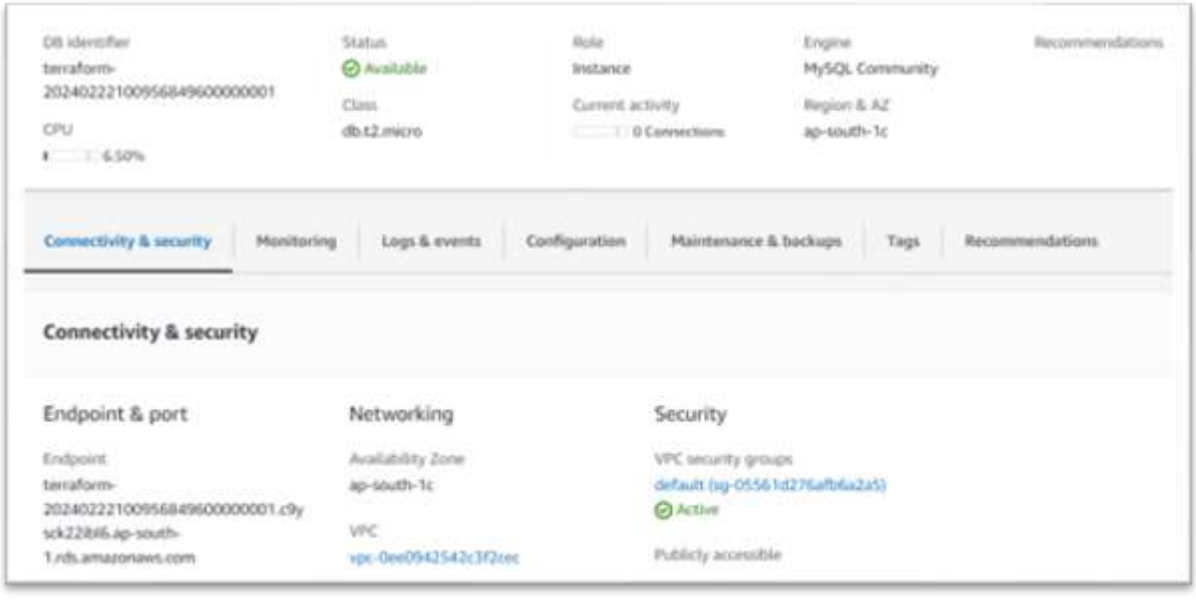
```
PS F:\UPES\6th Semester\Sys Provisioning and Cnfg Mgmt\Lab\Terraform-Lab-Scripts\Terraform RDS-10> terraform apply -auto-approve

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
  + create

Terraform will perform the following actions:

  # aws_db_instance.My-RDS will be created
  + resource "aws_db_instance" "My-RDS" {
      + address                               = (known after apply)
      + allocated_storage                     = 10
      + apply_immediately                     = false
      + arn                                   = (known after apply)
      + auto_minor_version_upgrade            = true
      + availability_zone                     = (known after apply)
      + backup_retention_period               = (known after apply)
      + backup_target                         = (known after apply)
      + backup_window                         = (known after apply)
      + ca_cert_identifier                    = (known after apply)
      + character_set_name                    = (known after apply)
      + copy_tags_to_snapshot                 = false
      + db_name                               = "upesdb"
      + db_subnet_group_name                  = (known after apply)
      + delete_automated_backups              = true
      + endpoint                              = (known after apply)
      + engine                                = "mysql"
      + engine_version                        = "5.7"
      + engine_version_actual                 = (known after apply)
      + hosted_zone_id                        = (known after apply)
      + id                                    = (known after apply)
      + identifier                            = (known after apply)
      + identifier_prefix                     = (known after apply)
      + instance_class                        = "db.t2.micro"
      + iops                                  = (known after apply)
      + kms_key_id                            = (known after apply)
      + latest_restorable_time                = (known after apply)
      + license_model                         = (known after apply)
      + listener_endpoint                     = (known after apply)
      + maintenance_window                    = (known after apply)
      + master_user_secret                    = (known after apply)
      + master_user_secret_kms_key_id         = (known after apply)
      + monitoring_interval                   = 0
```

```
      + password                              = (sensitive value)
      + performance_insights_enabled          = false
      + performance_insights_kms_key_id       = (known after apply)
      + performance_insights_retention_period = (known after apply)
      + port                                  = (known after apply)
      + publicly_accessible                   = true
      + replica_mode                          = (known after apply)
      + replicas                              = (known after apply)
      + resource_id                           = (known after apply)
      + skip_final_snapshot                   = true
      + snapshot_identifier                   = (known after apply)
      + status                                = (known after apply)
      + storage_throughput                    = (known after apply)
      + storage_type                          = (known after apply)
      + tags                                  = {
          + "Name" = "My-RDS"
        }
      + tags_all                              = {
          + "Name" = "My-RDS"
        }
      + timezone                              = (known after apply)
      + username                              = "admin"
      + vpc_security_group_ids                = (known after apply)
    }
```

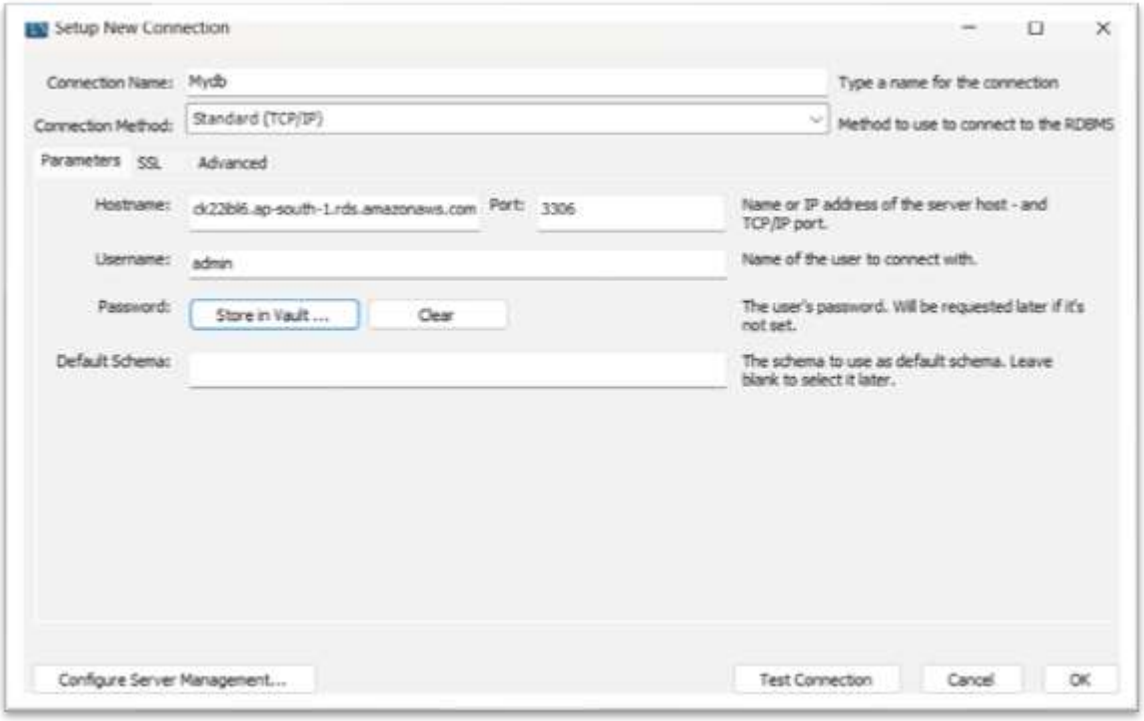
```
Plan: 1 to add, 0 to change, 0 to destroy.
aws_db_instance.My-RDS: Creating...
aws_db_instance.My-RDS: Still creating... [10s elapsed]
aws_db_instance.My-RDS: Still creating... [20s elapsed]
aws_db_instance.My-RDS: Still creating... [30s elapsed]
aws_db_instance.My-RDS: Still creating... [40s elapsed]
aws_db_instance.My-RDS: Still creating... [50s elapsed]
aws_db_instance.My-RDS: Still creating... [1m0s elapsed]
aws_db_instance.My-RDS: Still creating... [1m10s elapsed]
aws_db_instance.My-RDS: Still creating... [1m20s elapsed]
aws_db_instance.My-RDS: Still creating... [1m30s elapsed]
aws_db_instance.My-RDS: Still creating... [1m40s elapsed]
aws_db_instance.My-RDS: Still creating... [1m50s elapsed]
aws_db_instance.My-RDS: Still creating... [2m0s elapsed]
aws_db_instance.My-RDS: Still creating... [2m10s elapsed]
aws_db_instance.My-RDS: Still creating... [2m20s elapsed]
aws_db_instance.My-RDS: Still creating... [2m30s elapsed]
aws_db_instance.My-RDS: Still creating... [2m40s elapsed]
aws_db_instance.My-RDS: Still creating... [2m50s elapsed]
aws_db_instance.My-RDS: Still creating... [3m0s elapsed]
aws_db_instance.My-RDS: Still creating... [3m10s elapsed]
aws_db_instance.My-RDS: Still creating... [3m20s elapsed]
aws_db_instance.My-RDS: Still creating... [3m30s elapsed]
aws_db_instance.My-RDS: Still creating... [3m40s elapsed]
aws_db_instance.My-RDS: Still creating... [3m50s elapsed]
aws_db_instance.My-RDS: Still creating... [4m0s elapsed]
aws_db_instance.My-RDS: Still creating... [4m10s elapsed]
aws_db_instance.My-RDS: Still creating... [4m20s elapsed]
aws_db_instance.My-RDS: Still creating... [4m30s elapsed]
aws_db_instance.My-RDS: Still creating... [4m40s elapsed]
aws_db_instance.My-RDS: Still creating... [4m50s elapsed]
aws_db_instance.My-RDS: Creation complete after 4m55s [id=db-H6GZ523XUALX23EB5TPPSTJCI4]

Apply complete! Resources: 1 added, 0 changed, 0 destroyed.
```

7] Verify Resources on AWS Management Console.





8] Connect with MySQL Workbench with proper Configuration and save it.



9] Cleanup Resources using command “Terraform destroy”

```
PS F:\UPES\6th Semester\Sys Provisioning and Cnfg Mgmt\Lab\Terraform-Lab-Scripts\Terraform RDS-10> terraform destroy -auto-approve
aws_db_instance.My-RDS: Refreshing state... [id=db-H6GZ523XUALX23EBSTPPSTJCI4]

Terraform used the selected providers to generate the following execution plan. Resource actions are indicated with the following symbols:
  - destroy

Terraform will perform the following actions:

  # aws_db_instance.My-RDS will be destroyed
  - resource "aws_db_instance" "My-RDS" {
      - address                               = "terraform-20240222100956849600000001.c9ysck22ibl6.ap-south-1.rds.amazonaws.com" -> null
      - allocated_storage                     = 10 -> null
      - apply_immediately                     = false -> null
      - arn                                   = "arn:aws:rds:ap-south-1:394464380823:db:terraform-20240222100956849600000001" -> null
      - auto_minor_version_upgrade            = true -> null
      - availability_zone                     = "ap-south-1c" -> null
      - backup_retention_period               = 0 -> null
      - backup_target                         = "region" -> null
      - backup_window                         = "23:41-00:11" -> null
      - ca_cert_identifier                    = "rds-ca-rsa2048-g1" -> null
      - copy_tags_to_snapshot                 = false -> null
      - customer_owned_ip_enabled             = false -> null
      - db_name                               = "upesdb" -> null
      - db_subnet_group_name                  = "default" -> null
      - delete_automated_backups              = true -> null
      - deletion_protection                   = false -> null
      - enabled_cloudwatch_logs_exports       = [] -> null
      - endpoint                              = "terraform-20240222100956849600000001.c9ysck22ibl6.ap-south-1.rds.amazonaws.com:3306" -> n
      - engine                                = "mysql" -> null
      - engine_version                        = "5.7" -> null
      - engine_version_actual                 = "5.7.44" -> null
      - hosted_zone_id                        = "Z2VFMSZA7417XZ" -> null
      - iam_database_authentication_enabled   = false -> null
      - id                                    = "db-H6GZ523XUALX23EBSTPPSTJCI4" -> null
      - identifier                            = "terraform-20240222100956849600000001" -> null
      - identifier_prefix                     = "terraform-" -> null
      - instance_class                        = "db.t2.micro" -> null
      - iops                                  = 0 -> null
      - license_model                         = "general-public-license" -> null
```

```
    - maintenance_window                    = "sat:08:13-sat:08:43" -> null
    - master_user_secret                    = [] -> null
    - max_allocated_storage                 = 0 -> null
    - monitoring_interval                   = 0 -> null
    - multi_az                              = false -> null
    - network_type                          = "IPV4" -> null
    - option_group_name                     = "default:mysql-5-7" -> null
    - parameter_group_name                  = "default.mysql5.7" -> null
    - password                              = (sensitive value) -> null
    - performance_insights_enabled          = false -> null
    - performance_insights_retention_period = 0 -> null
    - port                                  = 3306 -> null
    - publicly_accessible                   = true -> null
    - replicas                              = [] -> null
    - resource_id                           = "db-H6GZ523XUALX23EB5TPPSTJCI4" -> null
    - skip_final_snapshot                   = true -> null
    - status                                = "available" -> null
    - storage_encrypted                     = false -> null
    - storage_throughput                    = 0 -> null
    - storage_type                          = "gp2" -> null
    - tags                                  = {
        - "Name" = "My-RDS"
      } -> null
    - tags_all                              = {
        - "Name" = "My-RDS"
      } -> null
    - username                              = "admin" -> null
    - vpc_security_group_ids                = [
        - "sg-05561d276afb6a2a5",
      ] -> null
  }
```

```
Plan: 0 to add, 0 to change, 1 to destroy.
aws_db_instance.My-RDS: Destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 10s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 20s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 30s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 40s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 50s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 1m0s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 1m10s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 1m20s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 1m30s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 1m40s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 1m50s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 2m0s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 2m10s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 2m20s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 2m30s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 2m40s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 2m50s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 3m0s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 3m10s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 3m20s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 3m30s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 3m40s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 3m50s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 4m0s elapsed]
aws_db_instance.My-RDS: Still destroying... [id=db-H6GZ523XUALX23EB5TPPSTJCI4, 4m10s elapsed]
aws_db_instance.My-RDS: Destruction complete after 4m20s

Destroy complete! Resources: 1 destroyed.
PS F:\UPES\6th Semester\Sys Provisioning and Cnfg Mgmt\Lab\Terraform-Lab-Scripts\Terraform RDS-10>
```